Human Factors International

The Value of an Expert Review and 5–Step Review Checklist

White paper

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About the author

Wendy Yee, Ph.D., CUA, is a Project Director for Human Factors International (HFI). While working at HFI, she has completed a wide range of user-centered design projects for clients, including SAP Global Marketing, SITA, Principal Financial Group, and various U.S. government agencies.

Wendy received her doctorate in neuroscience from the Johns Hopkins University School of Medicine and her bachelor's degree from the Massachusetts Institute of Technology.

Wendy has proven experience in increasing the usability of Web applications, sites, and related interfaces. She creates and tests user-centric information architectures and interfaces. She provides strategic advice to clients on best practices for usable Web applications, public Web sites, and Intranets. She excels in projects that have challenging strategic, organizational, and technical goals.

Acknowledgment

I would like to thank Dr. Eric Schaffer and Steve Fleming for creating the 5-step checklist that is included in the Appendix on page 13.

Executive summary

Software design and development organizations often find themselves in a position where they know they have (or suspect they have) usability issues with their product. Unfortunately, they may not have the time or resources to do usability testing and often do not have time to redo the design phase. However, they do know they need to fix the most pressing usability problems. This is the situation when they need an Expert Review.

In an Expert Review, usability and human factors practitioners evaluate the status of an existing or prototype application or site. A thorough Expert Review examines the user interface in the context of specific user scenarios and business requirements. It focuses on navigation, information architecture, task flow, page flow, labeling, page layout, and detailed design issues.

Organizations can leverage the strengths of an Expert Review to generate "quick wins" during specific points in the development of an interface:

- **Planning:** Evaluating existing applications or sites
- **Early stages of a redesign:** Preparing for a major redesign
- **Planning for usability testing:** Identifying critical usability issues to be fixed prior to usability testing
- **Periodic tracking:** Evaluating major releases to assess improvements to usability and to identify additional issues

An Expert Review should outline short and long-term recommendations as part of an action plan and highlight critical changes necessary for improving ease of use.

Interestingly, many recommendations from an Expert Review are of the "big bang for the buck" variety, where changes can lead to an immediate improvement in the ease of use but are not necessarily expensive to make. For example, one online business service had requested an Expert Review of the top-level pages used by account holders. The service had received extremely negative user feedback about its relative lack of account features—despite the fact that they had doubled their features four months prior to the Expert Review. The service was justifiably concerned about losing its paying users to competitors.

Their Expert Review recommended that the service stop displaying promotional, non-account information on account home pages so that users could focus on features currently available for their specific account items. The service later reported that they made the change in less than 2 days and experienced a significant drop in negative feedback

and call center requests. The Expert Review paid for itself in just weeks because the service no longer received hundreds of call center requests a week, with each call and customer follow-up costing upwards of $40 to handle.

In this white paper, we discuss the rationale for Expert Reviews, basic criteria for their use, and best practice circumstances for employing the Expert Review as a diagnostic tool.

What an Expert Review provides: a preventive approach to identifying usability issues

Designing an interface for a software application or a Web site can be a very eye-opening process. Graphics designers, developers, project managers, business analysts, marketing staff, and stakeholders may all try to inject their 2 cents or $2000 worth of input into the design and development of the future release of "Solution Z."

This collaboration should definitely be encouraged. All of these project participants have good intentions and are very good at their respective jobs. Together, the wise use of their combined input makes it more likely that the final product or site will fulfill its intended product and marketing niches.

In a perfect world, this collaborative process would lead to the creation of a highly usable, outstanding Solution Z that wins numerous industry awards and generates large sums of income for your company.

Unfortunately, this is not a perfect world, and a great development team can still fail to catch usability problems until after the release of Solution Z. As experienced developers and project managers know, fixing usability problems post-release typically costs more than fixing them during earlier stages of development (1). Substantial post-release fixes can also negatively affect your company's reputation with users, who tend to be very impatient and expect everything to work for them the first time.

As a preventive measure, many software and Web development organizations commonly use the Expert Review to assess the status of potential usability issues before proceeding with an ongoing development project, redesign, or key usability test.

An Expert Review:

• Identifies major usability issues that affect your interface by using a structured walk-though process (2). It documents the different ways these issues can affect your users in the context of specific scenarios.

Reviewers call these issues "bottlenecks," "showstoppers," or "road-blocks." Reviewers may also evaluate the application or interface for adherence to specific usability "rules," or heuristics.

- Evaluates navigation and information architecture from an external user-centered ergonomics perspective. A review also inspects task flow, page flow, labeling, page layout, and detailed design, looking for issues specific to a particular scenario or personae. A review is similar to a medical X-ray—it is a first-pass diagnostic tool that allows practitioners to evaluate the overall condition.

- Provides specific examples of both positive and negative usability issues in the application or site, including suggestions for improvement of an application or site.

- Provides prioritized recommendations for short- and long-term modifications to the application or site and explains why certain items have higher priority than others. These recommendations should also identify the issues that affect users most and prescribe a "fix" for each. Strikingly, many usability recommendations that originate from a good Expert Review are not expensive to implement. But they often make a significant improvement in the ease of use for an interface.

An Expert Review is strictly a diagnostic tool, which means that it is not intended to substitute for data gathering, usability testing, or a well-informed redesign process.

This means that Expert Reviews are not equipped to:

- Identify key user groups, user scenarios, or important user tasks in the absence of necessary real-world information.

- Tell you whether your current site or application meets users' functional requirements. Although the reviewer might have some limited insight based on previous experience, an Expert Review cannot substitute for contextual inquiry interviews with stakeholders or users, or other data gathering methods such as user surveys.

- Pinpoint specific problems in a task-flow or navigation system that prevents users from completing a task or understanding their options. Only usability testing provides this level of detailed insight.

When to use an Expert Review

The Expert Review, as a diagnostic tool, provides a high-level overview of the current state of an application or site. It delivers the most value when used in the appropriate context and is informed by the relevant business goals.

There are specific points in the development process when an organization is best positioned to leverage the strengths of an Expert Review to yield the appropriate "quick wins":

- **Evaluation phase of a redesign project:** An Expert Review can be used to evaluate the current state of an application or site. The action plan generated from the review can be used as a checklist of issues to be addressed during redesign. It can also serve as a heads-up that more information is needed on user requirements.

  For example, an online retailer may find out that its task-flow for completing a transaction has a number of issues that may prevent users from understanding the steps they need to take. Expert Reviews can identify what works and what doesn't as well as deliver prescriptive recommendations to shape design decisions.

- **Early design or development phases for a new prototype or release:** Expert Reviews can also be used to evaluate preliminary designs or prototypes before the organization commits significant resources to the implementation phase. This allows the organization to catch major usability issues *before* the development team becomes "wedded" to any one functional prototype.

- **Planning and preparation for a major usability test:** An Expert Review is often used to help organizations prepare for usability testing. The review's findings allow the design and development team to identify and fix major usability issues before actual users test the latest release or prototype. This process removes distractions and barriers to use during the actual test, which should improve the ability to generate task- or site-specific test data.

- **Post-release:** Organizations with a usability plan may arrange for an Expert Review of every major release or even an Expert Review once a year to track how their application or site has improved and which areas still require improvement.

Similar to a physician who rapidly decides whether a specific medical test is suitable for a patient, usability practitioners run through a mental checklist of criteria to determine whether or not an Expert Review is called for. In addition to evaluating an organization's need for an Expert

Review in the context of different stages (above), the practitioner may use a qualitative checklist such as the one at the end of this paper.

While there have been some disputes in the usability field about the usefulness of rule-based heuristic reviews (3), it is clear that many usability practitioners value Expert Reviews—rigorous, business-goal informed reviews that employ specific user scenarios to explore navigation, information architecture, task flow, and consistency—for their relevancy and insight.(4, 5)

In a majority of cases, we have found that organizations approach external usability practitioners for Expert Reviews when there is already some level of internal recognition that usability issues exist or may potentially exist. The "external" practitioner may be a contractor or even an "internal" consultant in the case of a large organization.

In some organizations, there is already a certain level of usability expertise; in other cases, there may be an underground movement to embrace user-centered design that has not been fully recognized. Most organizations initiate Expert Reviews because they understand it will help them deliver a superior-quality product, especially when the application or site represents a major undertaking or a highly visible release.

Based on our experience, there seem to be four general categories of motivations that drive design or development teams to seek an Expert Review from external sources:

1) *They want someone to validate their observations of potential usability issues affecting their product.*
  • Internal organizational issues are the primary motivator here.
  • Tight development schedules (e.g. "pushing the window") may also be a factor. The project team might be looking for an external arbiter on whether taking the time to make usability improvements merits a possible delay in schedule.

2) *They are aware that they do not represent their users.*
  • Project teams typically know *too much* about their application's or site's functionality, features, and interface to be able to evaluate it from the end-users' perspective.
  • The project team (including graphic designers, developers, project managers, and marketing staff) does not represent their end-users. In all likelihood, the team is probably much better informed on technical, marketing, content, and design topics than the vast majority of intended end-users.

• Even if the project team has a similar background to its users, the insider knowledge of the goals and mission for the application or site has been indelibly imprinted on its members' memories. The way the team views the product will be forever influenced by its members' exposure to design and development decisions.

3) *Once they've started designing and developing an application or site, they may find it difficult to step back and evaluate.*
  • The project team members have spent, or will be spending, a lot of time evaluating multiple options and making difficult decisions about functionality, cost, benefit, presentation, and task flow. This is what they get paid to do, and they most likely do it extremely well. However, it means that they will be completely immersed in thousands of project details over the course of several months and fiscal quarters.
  • Good usability is a combination of both high-level and detailed design decisions and insight into user requirements and behavior. The need to shift between the 30,000-foot view of the forest and the 100X magnification view of tree leaves can be disorienting and possibly disheartening to a project team that has labored to get all the trees in the forest planted. Not all organizations have the benefit of a strong user-centered design perspective.

4) *To err is to be human. But it can be very uncomfortable.*
  • Everyone makes mistakes.
  • Software development is expensive. And no one likes to admit that they might have made a mistake because correcting mistakes can be very expensive. It can be easier to ask a third party to check for potential usability issues because it doesn't require asking your team members to scrutinize their own work from a different perspective and come up with suggestions themselves.
  • In software development, mistakes tend to compound into harder-to-fix mistakes once a product has been built based on a particular design or functionality specification. Some organizations tend to pay more attention to and act more quickly on external advice, which can serve as an advantage in competitive markets.

How an Expert Review succeeds

For an Expert Review to deliver value, the reviewer(s) who carry out the review will need:

  • Open communication with the development team and major project sponsors. The reviewer must gain insight into the specific business goals of the application or site and get quickly up to speed on any business-specific issues in order to focus the review process.

- Experience with business situations where usability has been used in a cost-effective and prioritized manner. This is important since Expert Reviews are only as good as the prioritized recommendations they deliver. The reviewer should be able to translate the review's findings into a succinct action plan that is relevant to the specific business at hand.

- Specific knowledge of user scenarios, including key tasks, site and user goals, and other metrics of success. The reviewer looks to the project sponsors to provide this background knowledge.

- In-depth knowledge of human factors and software ergonomics practices and research. An Expert Reviewer should understand the research and historical basis of so-called "rules" such as "seven plus or minus two," a rule that is often taken out of context in the development of user interfaces.

The case for external diagnosticians

As we noted at the end of Section 3, there is an inherent bias for a project team to focus on the immediate task at hand—building a great product—and all of the intensive planning and scheduling that goes along with design and development. External reviewers are much less likely to be swept up in the undertow of project initiatives and schedules, which allow them to contribute a more impartial, but certainly not unsympathetic, perspective on an application or site.

Just as a patient faced with the prospect of major surgery would ask for a second opinion, project teams often call for an external Expert Review to provide them with a renewed perspective on the big usability issues that they face. Organizations have told us that they especially like Expert Reviews because they tend to be cheaper and less time-consuming than usability tests and because a good Expert Review provides a valuable action plan that addresses both short- and long-term usability issues. Organizations have also informed us that this "usability action plan" alone is worth the price of an Expert Review because it prevents them from investing in re-design or re-development initiatives that would not have significantly affected their users' experience.

This said, it's important to keep in mind that Expert Reviews are not the only usability tool in a practitioner's toolkit—and Expert Reviews are not appropriate for all situations. Expert Reviews are just a part of the spectrum of the usability services that human factors practitioners offer. But that's another white paper…

References

(1) Robert S. Pressman. Software Engineering: A Practitioner's Approach, 5th edition. McGraw-Hill, NY (2001).

Pressman is the source of familiar software development warnings, such as "Every $1 invested in user-centered design returns between $2 and $100" and "80% of software lifecycle costs occur during the maintenance phase."

(2) Peter G. Polson, Clayton Lewis, John Rieman, and Cathleen Wharton: Cognitive walkthroughs: a method for theory-based evaluation of user interfaces. *Int. J. Man-Machine Studies* (1992) 36, 741-773.

This review contains a detailed description of the methodology behind the cognitive walkthrough, which is the basis for any scenario-based walkthrough in an Expert Review. The cognitive walkthough simulates a user's approach at each step in a task and checks the user's goals and recent memory to see if this would lead the user to the next correct step.

(3) The effectiveness of heuristic evaluations vs. usability testing. Bob Bailey, UI Design Update Newsletter—January, 2001 www.humanfactors.com/downloads/jan01.asp

Bailey argues that heuristic evaluations, which are a precursor to Expert Reviews and are based on defined usability guidelines, are an insufficient substitute for usability testing. Bailey claims that in a typical heuristic evaluation, half of the problems identified will be true problems and about half will not be problems.

(4) The Ergonomic Pragmatist weighs in on heuristic evaluations. Eric Schaffer, UI Design Update Newsletter—February, 2001 www.humanfactors.com/downloads/feb01.asp

Schaffer disagrees with the bulk of Bailey's assertion. While he agrees with Bailey that heuristics can only be taken so far in an evaluation, Schaffer disagrees with Bailey's argument that evaluations are not helpful. Schaffer says that while traditional heuristic evaluations may tend towards the superficial, "Expert Reviews" which use structured walkthroughs can provide very valuable and cost-effective information. Since usability testing may not identify all the issues that an Expert Review can, and usability testing tends to be more expensive than an Expert Review, Schaffer says he usually recommends an Expert Review for identifying existing problems before running usability tests.

(5) Web Site Reviews: Too Useful To Ignore, Forrester TechStrategy Brief, February 2, 2001, Harley Manning with Paul Sonderegger, Forrester Research.

Manning outlines three reasons why he also disagrees with Bailey's arguments: (i) rapid development cycles do not always permit usability testing due to time requirements for recruiting participants, whereas an Expert Review can be conducted immediately; (ii) it's acceptable in real-world situations for Expert Reviews to catch 80% of the problems; the 20% of the "false alarms" may also not really be false alarms; (iii) Expert Reviews are widely used by usability practitioners, often before usability tests are conducted.

Related reading

Deborah Hix and H. Rex Hartson, Developing User Interfaces: Ensuring Usability Through Product and Process, John Wiley and Sons, 1993.

Jakob Nielsen and Robert L. Mack (editors), Usability Inspection Methods. John Wiley & Sons, 1994.

Patrick W. Jordan, Bruce Thomas, and Bernard A. Weerdmeester (editors), Usability Evaluation in Industry. Taylor & Francis, 1996.

Step 1—Is the site important enough to justify a review?

❑ The site has thousands of public visitors each day.
❑ The site is used by thousands of internal staff or used nearly full time by at least 500 staff.
❑ User experience or performance on the site is critical (e.g., if lives are at stake the site must be ergonomically correct, even if there are only a few users)

YES—If you meet AT LEAST ONE of these criteria your site is important enough to justify the cost of an Expert Review. Continue with the following 4 steps.
IF NO—try HFI's Page Review service: www.humanfactors.com/services/pagereviews.asp

Step 2—Did the development process fail to ensure optimal usability?

❑ The development team did not include fully trained usability staff.
❑ Less than 5% of the development budget was spent on user-centered design and usability testing.
❑ The recommendations of the usability team were not uniformly incorporated into the design.
❑ Only one usability team focused on the design. There has been no second opinion.

YES—If you meet ANY of these criteria, an Expert Review is probably worthwhile.

Step 3—Does the site have performance indicating poor usability?

❑ There are points of high drop-off, a disappointing conversion rate, or a lower than expected frequency of return visits.
❑ There are high levels of calls to the support line, use of online help, use of a site map, or use of the "search" function.
❑ There is training required to use the site.

YES—If you meet ANY of these criteria, the Expert Review is probably worthwhile.

Step 4—Do the users and informal reviewers suggest usability problems?

❑ Users have trouble finding information.
❑ The navigation or sequence of steps isn't quite right to support user activities.
❑ There is confusion with wording or operation of the pages.
❑ There is a feeling that the site is cluttered, confusing, ugly, or boring.

YES—If you meet ANY of these criteria, the Expert Review is probably worthwhile.

Step 5—Do you see obvious design features that indicate usability problems?

❑ The home page has more than two major navigational schemes.
❑ The structure of the site reflects your organization structure or viewpoint—not the user's viewpoint.
❑ The user must navigate more than three pages before they have a success experience.
❑ There is lack of consistency in categorization.
❑ There is a lack of consistency in page design.
❑ Wording includes jargon or complex sentences.
❑ The site uses animation gratuitously.
❑ The site uses pulldown or popup menus.
❑ Space on the page is often wasted.

YES—If you meet ANY of these criteria, the Expert Review is probably worthwhile.

For an Expert Review of your Web site or application, call HFI at 1-800-242-4480.